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the species of the first group, and a southern limit to that of the species of the second group, the limit in each case being the point where the spawning temperature disappears; and the factor which has determined whether a given species was to remain a marine, or to become a fresh water form, has been the egg type. W. C. K.

Development of the Face. — As a contribution to the study of the external form of developing vertebrates, Rabl¹ has published eight quarto lithographic plates illustrating the development of the face in mammals. The species chosen are the rabbit, the pig, and the human being; and of the first as many as seventeen stages are shown. Each stage is illustrated as a rule by three views of the head: full face, profile, and three-quarters. The material from which the drawings were made was selected with as much care as the circumstances would permit, and fixed in picro-sublimate or in platinic chloride and sublimate. It was found advantageous for surface views to stain the embryos in Grenacher's alcoholic borax carmine. The surface configuration of such specimens has been rendered in the figures with exquisite fineness of touch, reflecting great credit alike on the draughtsman and the lithographer. The figures are not marred by descriptive lettering, but a sheet of semi-transparent paper is attached to each plate and bears the outlines of the figures and the lettering. The text is a running description of the material. Problems of external morphology are not discussed in it, though the author hopes that the work may afford a basis for the study of the laws governing the development of external form. Three more parts are to be issued covering presumably the other groups of vertebrates, and the whole will constitute an indispensable guide not only to the specialist in the development of the face, but to embryologists in general. Great credit is due to the author and to the publisher for the production of so beautiful a piece of work, and also to the Imperial Academy of Sciences in Vienna for its generous support. P.

Pectoral Appendages of Birds. — The latest published part of Fürbringer's² exhaustive studies on the comparative anatomy of the

¹ Rabl. C. *Die Entwicklung des Gesichtes*. Heft 1, Das Gesicht der Säugethiere, I. Leipzig, W. Englemann, 1902. vi + 21 pp., 8 pls.

² Fürbringer, M. Zur vergleichenden Anatomie des Brustschulterapparates und der Schultermuskeln. *Jenaische Zeitschrift für Naturwissenschaft*, Bd. xxxvi (1902), pp. 289-736, Taf. XVIII-XXII.

pectoral region of vertebrates contains an account of the bones, nerves, and muscles of the breast, shoulder, and wings of birds. In addition to the admirably clear descriptions of the anatomy of these organs, this part is of special interest in that it contains a full discussion of the systematic relations of the orders and families of birds as well as an account of the relations of birds to other vertebrates. The diphyletic origin of the birds as represented by the Ratitæ and Carinatae is regarded as an untenable assumption by Fürbringer, who argues for the racial unity of the whole group. From this standpoint the Ratitæ represent either a primitive stock from which the Carinatae have sprung or, as Fürbringer believes, a degenerate assemblage derived from the Carinatae. The author further believes that birds have had their origin from none of the known orders of reptiles, but from an ancient stock among the very oldest reptiles and of which at present no remains are known. p.

Spiders of the United States.¹—As the title indicates, this book was written to meet a popular need. The first part, which is given up to a short introduction on structure, collecting, and habits, might very well have been enlarged. The remainder of the book is taken up by a systematic account of spiders.

About two hundred of the common species of the eastern United States are described. The descriptions are short, often very short. The illustrations are excellent. Each species has one and often four figures to show the characteristic parts and markings. The common round web species that are found in similar places are described together. The photographs of the webs are especially good, and from them the whole process of web making can be followed.

The value of the book would have been increased for amateurs by reference to a few of the popular books on spiders, and for more advanced readers by the authorities of the species.

BOTANY.

The Yuccæ.²—At a time when systematic activity is preponderatingly segregative and the tendency to publish species separately

¹ Emerton, James H. *The Common Spiders of the United States*. Boston, Ginn & Co., 1902. 8vo, xviii + 225 pp., 501 figs.

² Trelease, William. *Thirteenth Annual Report of the Missouri Botanical Garden*, July, 1902.